

What is claimed is:

1.

A method for producing a whey protein isolate from a casein containing milk starting material comprising:  
obtaining de-creamed milk starting material;  
removing any casein present in said starting material, to form decaseinated milk starting material, and thereafter  
removing lipids from said decaseinated starting milk product, to form a protein isolate of 80% or greater protein content.

2.

The method of claim 1 wherein said step of removing casein comprises:  
adjusting the pH of said milk starting material so that casein will precipitate.

3.

The method of claim 2 wherein said pH is adjusted to a pH of approximately 4.4 to 4.6.

4.

The method of claim 3 wherein said pH adjustment is through addition of an acid such as dilute HCl and 10% acetic acid.

5.

The method of claim 2 wherein said casein removal further comprises the step of removing precipitated caseins.

6.

The method of claim 5 wherein said precipitated caseins are removed by a method identified from the group consisting of filtration, settling, filter pressing or centrifugation.

7.

The method of claim 6 wherein said precipitated casein is removed by centrifugation.

8.

The method of claim 1 wherein said removal of lipids is accomplished by pH adjustment and water dialyzing said solution to precipitate remaining lipids.

9.

The method of claim 8 wherein said pH adjustment and water dialysis occurs until a point that the activity of the solution reaches a low conductivity of less than 4 mS.

10.

The method of claim 9 wherein said conductivity is in a range of less than 1 mS then the pH is adjusted to between 4.6 and 4.8 with acid, preferably 2M HCl.

11.

The method of claim 10 wherein said conductivity of said solution is 0.6 mS.

12.

The method of claim 8 further comprising the step of removing said precipitated lipids.

13.

The method of claim 12 wherein said precipitated lipids are removed by a process selected from the group consisting of filtration, filter pressing, settling, or centrifugation.

14.

The method of claim 1 further comprising the step of:  
filtering said protein isolate to remove any remaining small molecules.

15.

A method for producing a whey protein isolate from whey starting material comprising:  
removing lipids from said whey starting material, by the addition of a silicon dioxide to precipitate said lipids and to clarify said isolate.

16.

The method of claim 15 wherein said removal of lipids is accomplished further by the step of:  
pH adjusting and water dialyzing said solution to precipitate remaining lipids.

17.

The method of claim 16 wherein said pH adjustment and water dialyzation occurs until a point that the activity of the solution reaches a low conductivity of less than 4 mS.

18.

The method of claim 17 wherein said conductivity is in a range of less than 1 mS then the pH is adjusted to between 4.6 and 4.8 with acid, preferably 2M HCl.

19.

The method of claim 18 wherein said conductivity of said solution is 0.6 mS.

20.

The method of claim 19 further comprising the step of removing said precipitated lipids.

21.

The method of claim 17 wherein said precipitated lipids are removed by a process selected from the group consisting of filtration, filter pressing, settling, or centrifugation.

22.

The method of claim 15 further comprising the step of filtering said clarified isolate to remove any remaining small molecules.

23.

A method for producing a clarified whey protein isolate from a milk starting material comprising:  
obtaining de-creamed milk starting material;  
removing any casein present in said starting material, to form decaseinated milk material and thereafter  
introducing an effective amount of silica to said decaseinated starting material so that lipids, calcium and phosphate may be precipitated and removed, to form a clarified product, and  
further removing lipids from said clarified product.

24.

The method of claim 23 wherein said step of removing casein comprises adjusting the pH of said milk starting material so that casein will precipitate.

25.

The method of claim 24 wherein said pH is adjusted to a pH of approximately 4.4 to 4.6.

26.

The method of claim 25 wherein said pH adjustment is through addition of an acid such as dilute HCl and 10% acetic acid.

27.

The method of claim 24 wherein said casein removal further comprises the step of removing precipitated caseins.

28.

The method of claim 27 wherein said precipitated caseins are removed by a method identified from the group consisting of filtration, settling, filter pressing or centrifugation.

29.

The method of claim 28 wherein said precipitated casein is removed by centrifugation.

30.

The method of claim 23 wherein said further removal of lipids is accomplished by water dialyzing and subsequent pH adjustment of said solution to precipitate lipids.

31.

The method of claim 30 wherein water dialyzation occurs until a point that the activity of the solution reaches a low conductivity of less than 4 mS.

32.

The method of claim 31 wherein said conductivity is in a range of less than 1 mS then the pH is adjusted to between 4.6 and 4.8 with acid, preferably 2M HCl.

33.

The method of claim 32 wherein said conductivity of said solution is 0.6 mS.

34.

The method of claim 30 further comprising the step of removing said precipitated lipids.

35.

The method of claim 34 wherein said precipitated lipids are removed by a process selected from the group consisting of filtration, filter pressing, settling, or centrifugation.

36.

The method of claim 23 further comprising the step of filtering said clarified product to remove any remaining small molecules.

37.

A whey protein isolate product purified from milk starting material produced by the method of claim 1.

38.

A whey protein isolate prepared from milk starting material, said isolate produced by the method of claim 15.

39.

A whey protein isolate prepared from milk starting material, said isolate produced by the method of claim 23.

40.

A whey protein isolate produced from milk starting material, wherein said isolate comprises approximately 80% or greater and preferably 90% or greater protein content of said milk starting material, and wherein said protein isolate mimics the protein profile present in said starting milk material.

41.

A method for purifying a protein from casein containing milk starting material comprising:  
obtaining de-creamed milk starting material;  
removing any casein present in said starting material, to form decaseinated milk starting material, and thereafter  
removing lipids from said decaseinated starting milk product, to form a protein isolate of 80% or greater and preferably 90% or greater protein content, and thereafter purifying said protein from the protein isolate.

42.

A method for purifying a recombinant protein from casein containing milk starting material comprising:

obtaining de-creamed milk starting material;

removing any casein present in said starting material, to form decaseinated milk starting material, and thereafter

removing lipids from said decaseinated starting milk product, to form a protein isolate of 80% or greater and preferably 90% or greater protein content, and thereafter purifying said recombinant protein from the protein isolate.

43.

The method of claim 43 wherein said recombinant protein is recombinant human serum albumin.

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